ATTORNEY DOCKET: PD-03W133
PATENT

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. Please amend the claims to reflect the following:

1. (Previously Presented) A laser comprising:

an active medium disposed within a resonator;

a material operationally coupled to said medium and having a transmittance property that varies in response to incident energy; and

means disposed external to said medium for applying energy to said material, said means having a response time that is shorter than or equal to a round trip delay time of light within said resonator.

2. (Original) The invention of Claim 1 wherein said material is a saturable absorber.

3. (Previously Presented) The invention of Claim 1 wherein said means for applying energy includes a diode laser adapted to deliver an optical pulse of duration shorter than or equal to said round trip delay time of light within said resonator.

4. (Original) The invention of Claim 3 wherein said means includes focusing optics disposed between said diode laser and said material.

5. (Original) The invention of Claim 4 further including a dichroic beamsplitter for directing said energy to said absorber material.

6. (Original) The invention of Claim 1 wherein said means is a quasi-monolithic diode laser assembly ring.

7. (Previously Presented) A modulated saturable absorber controlled laser comprising:

an active medium disposed within a resonator cavity;

a saturable absorber material disposed within said resonator; and

a light source disposed external to said medium for applying energy to said absorber for delivering an optical pulse capable of bleaching said absorber and of duration shorter than or equal to a round trip delay time of light within said resonator cavity.

8. (Original) The invention of Claim 7 wherein said light source is a diode laser.

9. (Original) The invention of Claim 7 further including focusing optics disposed between said light source and said material.

10. (Original) The invention of Claim 9 further including a dichroic beamsplitter for directing said energy to said absorber material.

11. (Original) The invention of Claim 7 wherein said light source is a quasi-monolithic diode laser assembly ring.

12. (Previously Presented) A method for lasing including steps of:

providing an active medium within a laser resonator cavity;

operationally coupling to said medium a material having a transmittance property that varies as a function of incident energy; and

applying energy to said material via an optical pulse capable of bleaching said absorber with a duration shorter than or equal to a round trip delay time of light within said resonator cavity.

13. (Original) The invention of Claim 12 further including the step of applying said energy after pumping said medium.

14. (Previously Presented) A laser comprising:

an active medium;

a material operationally coupled to said medium and having a transmittance property that varies in response to incident energy; and

quasi-monolithic diode laser assembly ring disposed external to said medium for applying energy to said material.

15. (Previously Presented) A dual mode laser comprising:

an active medium disposed within a resonator cavity;

means for changing the length of said cavity from a first length in a first mode of operation to a second length in a second mode of operation;

a material operationally coupled to said medium and having a transmittance property that varies in response to incident energy; and

means disposed external to said medium for applying energy to said material with a pulse having a duration that is shorter than or equal to a round trip delay time of light within said resonator in said first mode of operation and with a series of pulses at a mode-locking frequency in said second mode of operation.

16. (Previously Presented) The invention of Claim 15 wherein said material is a saturable absorber.

17. (Previously Presented) The invention of Claim 15 wherein said means for applying energy includes a diode laser.

18. (Previously Presented) The invention of Claim 15 further including an outcoupler and a first highly reflective mirror arranged to provide said resonator cavity therebetween.

19. (Previously Presented) The invention of Claim 18 further including a polarizer disposed between said outcoupler and said mirror.

20. (Previously Presented) The invention of Claim 19 wherein said means for changing the length of said cavity includes a polarization rotator disposed in optical alignment with said medium and said polarizer.

21. (Previously Presented) The invention of Claim 20 further including a second highly reflective mirror in operational alignment with said polarizer.

22. (Previously Presented) The invention of Claim 15 wherein said first mode is a Q-switched mode and said second mode is a mode-locked mode.

23. (Previously Presented) A dual mode laser comprising:

an outcoupler;

a first highly reflective mirror;

a second highly reflective mirror;

an active medium disposed within a resonator cavity defined by said outcoupler and said first mirror in a first mode of operation and second mirror in a second mode of operation;

a polarizer disposed in operational alignment with said outcoupler and said first and second mirrors;

a polarization rotator for changing the polarization of a beam reflected by said outcoupler;

a saturable absorber operationally coupled to said medium and having a transmittance property that varies in response to incident energy; and

a laser diode disposed external to said medium for applying energy to said material with a pulse having a duration that is shorter than or equal to a round trip delay time of light within said resonator in said first mode of operation and with a series of pulses at a mode-locking frequency in said second mode of operation.

24. (Previously Presented) A method for operating a laser in dual modes including the steps of:

providing an active medium disposed within a resonator cavity;

providing a material operationally coupled to said medium and having a transmittance property that varies in response to incident energy;

changing the length of said cavity from a first length in a first mode of operation to a second length in a second mode of operation; and

applying energy to said material with a pulse having a duration that is shorter than or equal to a round trip delay time of light within said resonator in said first mode of operation and with a series of pulses at a mode-locking frequency in said second mode of operation.

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